

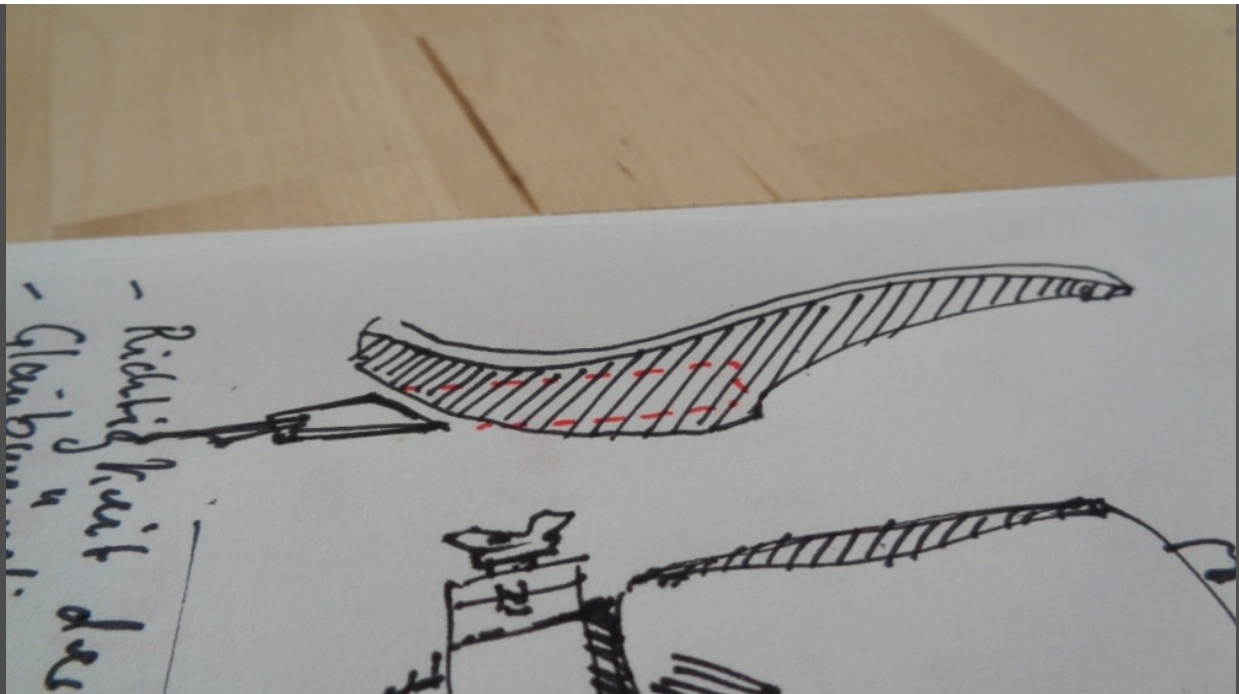


Precision Knife

Preface

A lot of coincidences met in this documentary. First I broke my wire cutter in the Multifunctional tool extension fix project. Since it was a very cheap mass product I wanted to throw it away. But before it was thrown into the garbage, I took off the rubber handles, because they could be released easily. I had a spontaneous idea and quickly sketched it out. You could use a nib. I put the idea on my later stack of paper. In the evening [I watched a video](#) and combined the idea with my grip. The next day I took my precision knife and held it to the rubber handle and it looked like it could fit.





Materials

The most important components for this project are the rubber handle and the precision knife. For this we still need a drill with a suitable drill head. I took a drill head that is suitable for wood but also works quite well with plastic. With a hacksaw we have to cut apart the small aluminium tube. We always have our safety glasses on so that we don't get metal splinters in the eye. Otherwise we need additional tools and materials, but we should all own them.

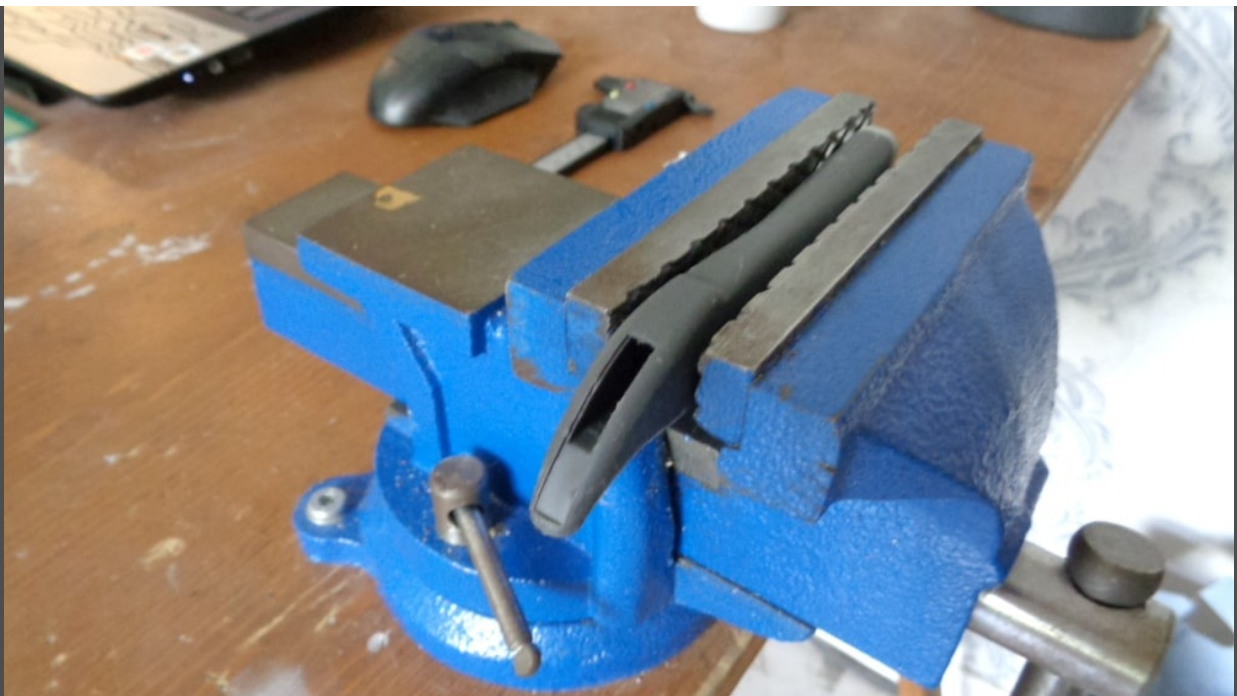
- Precision Knife
- Digital calipers
- Drilling machine
- Parallel vice or clamp
- Safety goggles
- Hacksaw
- Metal file
- Hammer
- Underlay mat
- Material for cutting (paper, cardboard oder thin film)

Realisation

First we measure the width of the aluminium pipe and the drill head with a digital measuring device. As you can see, the drill head is a little wider. This is no problem later, as the rubber from the handle should adapt itself in most cases. It is also good to have a little more space, nevertheless nothing should shake later. If something wobbles when we cut, we can slip off and hurt ourselves. We must therefore work cleanly and properly. Usually we have two handles and therefore a replacement if the first one breaks during drilling or the drill head was too wide.



Normally it is always better to have something where you can clamp components. As in Eric Strebel's video you can do it by hand, but I advise against it. With a parallel vice we can drill straight without slipping. Besides, we also have our hands free and that's usually better. When machining, we must make sure that the workpiece is not clamped too tightly. That could ruin it by accident and we want to avoid that. Nevertheless, it must not shake. Don't panic, you get a feeling for it very quickly.



Then we open our drill chuck on our drill and insert the drill head. Here, too, we have to tighten everything again so that this cannot come off when drilling. For testing we hold it to the clamped workpiece to measure the length. In my case I was lucky and I didn't have to put an extra ring around the drill head so I wouldn't drill beyond the length. You can also measure it exactly with a metre rule if you want to have it exactly.





When drilling, we have to pay attention to a few points. If we put the drill head on, it could easily slip off and misjudged. We must therefore not immediately operate the machine at 100% speed, but must work very slowly. If you work too fast and hectically at this point, you just ruin everything. In the photo it looks pretty broken and torn, but it's only the pieces coming out of the handle. After drilling you can still smooth the edges with the precision knife, so that it looks really neat.



After drilling, we insert the entire precision knife into the rubber handle. But we don't make this too tight, because we just want to test if it fits overall. As mentioned above, this should not be too loose and should not wobble. After inserting the aluminium tube as far as possible, we measure the excess length with a digital caliper gauge. Then we pull the knife out of the rubber and mark the other end with a black fineliner.





We disassemble the marked precision knife and clamp it into the parallel vice. Again, we take care not to make it too tight, because aluminium can bend very quickly. Then we saw off the superfluous end with the hacksaw. Then we clean the pipe with an iron file to remove the sharp chips. They are often to blame when we hurt ourselves and the cleaner we work, the less we can hurt ourselves. You should always keep that in mind

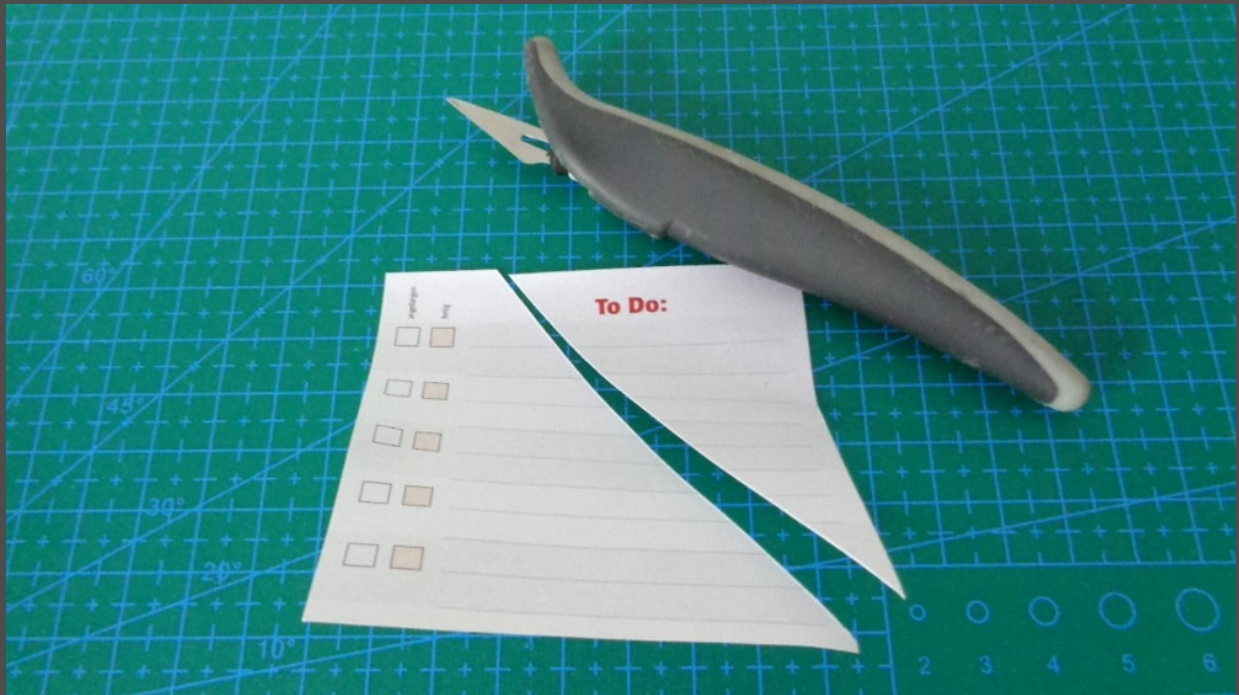


The ground workpiece is now carefully inserted into the rubber with a hammer. Before we are just before the end, we attach the first components and push everything into the rubber with a firm

pressure. We take care not to cut ourselves on the sharp blade.



After everything is tight, we take a rubber base and cut some materials. This can be paper, cardboard, or foil. Maybe you have to carve something on a plastic model and try out how the new precision knife lies in your hand. If this still wobbles you can put a small toothpick on the edge between rubber and metal and thus prevent this. I thought about filling everything up with body filler. But I didn't implement the idea because it holds up so well for me.



Conclusion

I am very satisfied with the result of this project. Everything worked out as I imagined and I didn't have to install an emergency solution at any point. This rarely happens because theory and practice can be very inseparable. I also tested the knife and it fits very well in the hand. When cutting paper, the bending of the rubber ensures that the index finger can exert force on the material. Also it is now possible to be more precise, because the Gumi has a good grip. Before, everything was wobbly, because the precision knife is a cheap product for which I have now spent very little money. Now this is a real tool with which you can work sensibly and cleanly. I did not have to throw the rubber into the garbage now.